

Claims

What is claimed is:

- 5 1. A grease composition comprising:
 - (a) an esterified polymer derived from monomers comprising:
 - (i) a vinyl aromatic monomer;
 - (ii) an unsaturated dicarboxylic acid anhydride or derivatives thereof;
 - (b) a thickening agent; and
 - (c) an oil of lubricating viscosity,
- 10 wherein the esterified polymer contains titratable acid groups with a total acid number of at least about 4.
- 15 2. The grease composition of claim 1, wherein the titratable acid groups have a Total Acid Number (TAN) in the range from about 5 to about 100.
- 15 3. The grease composition of claim 1, wherein the vinyl aromatic monomer is styrene, substituted styrene or mixtures thereof.
- 20 4. The grease composition of claim 1, wherein the unsaturated dicarboxylic acid anhydride or derivatives thereof is derived from maleic anhydride, methyl maleic anhydride, ethyl maleic anhydride, dimethyl maleic anhydride or mixtures thereof.
- 20 5. The grease composition of claim 1, wherein the conversion of dicarboxylic acid anhydride or derivatives thereof to ester groups is in the range of about 88 % to about 99.5 %.
- 25 6. The grease composition of claim 1, wherein the esterified polymer is derived from alcohols containing about 6 to about 24 carbon atoms.
- 25 7. The grease composition of claim 1, wherein the esterified polymer is derived from mixtures of alcohols containing at least one alcohol with about 6 to about 11 carbon atoms and at least one alcohol with about 12 to about 24 carbon atoms.
- 30 8. The grease composition of claim 1, wherein the esterified polymer optionally contains at least one reacted amine.

9. The grease composition of claim 1, wherein the esterified polymer is derived from a vinyl aromatic monomer present in the range from about 0.7 to about 1 mole equivalents relative to the amount of the dicarboxylic acid anhydride or derivatives thereof; and wherein the dicarboxylic acid anhydride or derivatives thereof is present in the esterified polymer in the range from about 0.7 to about 1 mole equivalents relative to the amount of the vinyl aromatic monomer.

10. The grease composition of claim 1, wherein the esterified polymer is present in a grease composition in the range from about 0.01 to about 30 weight percent of the grease composition; wherein the thickener is present in the range from about 3 to about 40 weight percent of the grease composition; the oil of lubricating viscosity is present in the range from about 20 to about 97 weight percent of the grease composition; and wherein the other performance additives are present in the range from 0 to about 20 weight percent of the grease composition.

15 11. A process for preparing a grease composition comprising the steps of:

- (1) mixing an esterified polymer derived from monomers comprising (i) a vinyl aromatic monomer; (ii) an unsaturated dicarboxylic acid anhydride or derivatives thereof; with a solvent to form a solvated polymer;
- (2) reacting the solvated polymer of step (1) with at least two alcohols containing (i) at least about 6 carbon atoms and (ii) the other containing less than about 6 carbon atoms to form a solvated polymer containing an ester or derivatives thereof;
- (3) optionally, adding to the solvated polymer containing an ester or derivatives thereof an amine with primary functionality, secondary functionality or mixtures thereof to form an amidated polymer;
- (4) adding the solvated polymer containing an ester or derivatives thereof of step (2) or the amidated polymer of step (3) to a thickening agent, an oil of lubricating viscosity or mixtures thereof; and
- (5) optionally adding to the product of step (4) adding at least one other performance additive to form a grease composition.

12. The use of the grease composition of claim 1 for imparting at least one improved property include improved water repellence, improved water wash-off, improved thickening, increased longevity and decreased wear.